

CLAIMS

What is claimed is:

1. A segmented annular mold for forming a tread belt having a reinforcing belt structure having a radial thickness (t), the mold comprising:
a plurality of radially movable and outwardly expandable inner segments for forming the inner surface of the tread belt; and
a plurality of radially movable and contracting outer segments for forming the outer tread belt surface wherein the radially inner and radially outer segments form a mold parting line at a location radially outward of a midpoint of the belt reinforcing structure of the tread belt at a location greater than 50% (t) as measured from the radially innermost surface of the belt reinforcing structure.
2. The segmented mold of claim 1 wherein the radially inner segments have upper and lower lateral edge forming portions extending outwardly to the parting line.
3. The segmented mold of claim 1 wherein the radially outer mold segments have upper and lower lateral edge forming portions extending inwardly to the parting line.
4. The segmented mold of claim 1 wherein the parting line is located at least radially outwardly of a radially inner second belt layer of the belt reinforcing structure.
5. The segmented mold of claim 4 wherein the tread belt has a radially inner 0° wire reinforced layer, two or more cross angled wire reinforced belt layers integrated between a 90° wire reinforced belt layer and the 0° wire layer; and
the mold parting line is located radially between or above the radially outermost cross ply layer and the 90° wire reinforced layer.
6. A segmented annular mold for forming a tread belt comprising:
a plurality of outer tread belt forming segments;
a plurality of radially movable and outwardly expandable inner segments for forming the inner surface of the tread belt;

a slidable hub assembly, the slidable hub assembly having a central shaft, an upper hub portion and a lower hub portion each slidably mounted onto the central shaft; each upper and lower hub portions having a plurality of linkage arms pivotably connected to the respective hub and the radially inner segments, each circumferentially adjacent segment being connected to either an upper or lower hub in an alternating pattern, the movement of one hub relative to the other being independently actuated by one or more means for moving the hub portions, and wherein the movement of the lower and upper hub into interlocking alignment moves the inner segments to form an annular ring.

7. The segmented annular mold for forming a tread belt of claim 6 further comprising:

a plurality of split "J" frames, one slide "J" frame for supporting each outer tread belt forming segment.

8. The segmented mold for forming a tread belt of claim 8, further comprises:

a base plate support attached to each split J frame;

a plurality of linear bearing rolls and bearing blocks, the bearing blocks being attached to the inner and outer segments, a pair of the linear bearing rails providing linear guides for the segments.

9. The segmented mold for forming an annular tread belt of claim 6 further comprises:

a cooling plate interposed between each segment and the linear bearing blocks attached to the respective segment.

10. The segmented mold for forming a tread belt of claim 9 wherein the cooling plate has a plurality of passages for passing a coolant medium.

11. A method of molding an annular tread belt comprises the steps of:
providing an open segmented annular mold for receiving and forming a

tread belt having a reinforcing belt structure having a radial thickness (t), the mold having a plurality of radially movable and outwardly expandable inner segments for forming the inner surface of the tread belt and a plurality of radially movable and contracting outer segments for forming the outer tread belt surface wherein the radially inner and radially outer segments form a mold parting line at a location radially outward of a midpoint of the belt reinforcing structure of the tread belt at a location greater than 50% (t) as measured from the radially innermost surface of the belt reinforcing structure;

- inserting a tread belt into the open mold;
- closing the mold; and
- curing the tread belt.

12. The method of claim 11 wherein the step of closing the mold includes the steps of

- moving a plurality of circumferentially alternating inner segments into radial contact with the tread belt;
- moving a plurality of outer segments into contact with the tread belt, the tread belt contacting outer segments being aligned with the contacting inner segments;
- moving the remaining inner segments into contact with the tread belt;
- moving the remaining outer segments into contact with the tread belt; and then
- moving all outer segments to a fully closed mold curing position.

13. The method of claim 11 wherein the step of curing the tread belt includes the step of pushing either the inner segments radially inwardly or the outer segments radially outwardly to allow the parting line to gap under thermal expansion of the rubber as the tread belt is cured.

14. The method of claim 13 wherein the inner segments are restrained mechanically and the outer segments are allowed to move radially outwardly.

15. A tread belt comprising

- a radially outer tread;

a belt reinforcing structure, the belt structure having at least a radially inner layer of 0° circumferentially extending wires, a pair of cross ply layers and a radially outer layer of 90° laterally extending wires; and

a parting line radially outward of the radially inner layer and at least one of the layers of the cross ply layers.